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ABSTRACT

The development of a population studies program is described. Questions indicating the content of the program are listed; these relate to human population, human needs, the environment, and problems raised by the interrelationships of these factors. Preparation of materials was undertaken by curriculum specialists in natural sciences and social sciences, and about sixty experienced teachers and administrators. Materials to be completed by summer 1970 are described. An outline of the approach to the development of the concept "nutrition" from kindergarten through twelfth grade is included. The program of a series of lectures arranged for the curriculum development group is appended. [Not available in hardcopy due to marginal legibility of original document.] (EB)

A Comprehensive Population Education Project

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Most people agree that the problems mentioned by Mr. Moran are important and must be studied, discussed, and answered. And, since the relationship between population and environment concerns everyone, it is important that everyone be informed so that democratic solutions are possible. Obviously, the schools must accept and prepare for a principal role in this process. One way to do this will be suggested here.

The involvement of the schools in this work has several dimensions:

1. selection of objectives;
2. preparation of teachable materials;
3. introduction of materials into school programs;
4. preparation of teachers.

OBJECTIVES

The content of a population studies program should include consideration of the following questions:

About the human population:

What is the history of the human population?

What is the size of the human population in various countries today?

What factors influence population growth and distribution?

At what rate is it growing worldwide and in various countries? Why?

What is the standard of living of various human populations? Why?

What are the predictions for the future growth and prosperity of various populations?

About human needs:

What are the basic needs of man? His aspirations?

How does man affect natural communities?

What is the nature of man? The biological base of behavior?

Is man basically a rational animal?

Is man a part of nature or is man destined to conquer nature?

What is the origin of man?

About the environment:

What are the earth's resources?

soil	oceans
water	forests
crops	open lands
fuel	habitable regions
minerals	recreation areas

About the interrelationships of populations, human needs, and the environment:

How does man affect the soil in industrialized nations? In non-industrialized nations?

What is man's effect on the supply and quality of other resources?

What is the effect of a growing industrialized population on the environment, generally?

What is the effect of increased numbers on the quality of life? On freedom?

Does the extent of human freedom and the quality of human life depend on the rational planning of population growth?

Is the planet Earth a space ship?

Are population problems fundamentally and ultimately problems of survival of the species?

About solutions:

What can planning and technology do to accommodate a much larger population in industrialized and non-industrialized nations?

What will be the effects of a human population of two, five, or ten times the present population?

Is population limitation possible?

Will voluntary cultural forces suffice to control population?

Will governmental regulation of human reproduction become necessary sometime?

If so, how could it be done?

What would be the effects of governmental control of reproduction?

Problems:

If and when the population is stabilized,* what problems arise? Economic? Political? Oppression and coercion?

What about moral and religious issues?

What about the gene pool?

Advantages:

What advantages would accrue to a stable* population?

Would a stable* population enable a society to concentrate on the quality of life? On the cultivation, refinement, development, enhancement, and enjoyment of the environment?

*Not changing in size

PREPARATION OF MATERIALS

The preparation of materials for population studies in the schools is an especially difficult problem for curriculum workers and teachers because of the broad spectrum of disciplines involved. Materials must be selected from biology, agriculture, geography, economics, sociology, philosophy, psychology, political science, and in fact, from almost every subject area. An individual cannot be expected to be highly schooled in all of these. Therefore, a cooperative effort is needed to select and synthesize pertinent content.

To do this, a partnership was formed between curriculum specialists in natural sciences and in social sciences. We then enlisted the help of about 60 experienced teachers and administrators, from various grade levels, mainly from two school districts.

To prepare the group for the curriculum development task, we arranged a year-long study phase, including twenty lectures by experts in population studies, plus ten related seminars. To support these studies, we continued to augment the Population Curriculum Study Center that was started a year earlier.

With this background and using the resources of the Center, we expect to prepare teachable materials for the schools during the summer, 1970.

These materials will include:

1. A comprehensive teacher's sourcebook in population studies, containing

selected readings, statistical bibliographies, evaluation devices, teaching aids, etc.

2. Specific student lessons, which may be new materials or modifications of existing curricular materials.
3. An outline of content with a schedule for progressive concept development throughout the entire school program, K-12, utilizing various subject areas as appropriate.

How this plan might work in the school program

To illustrate our perception of how conceptual schemes of human ecology could be integrated with the total school program, K-12, we have chosen to develop the concept of NUTRITION. We will attempt to show how the concept of energy flow through living communities can be included in the school program with a special emphasis on modern human problems such as health, hunger, food production, poverty, and population growth.

An entry point to this complex study of NUTRITION could be the topic FOOD. An approach to the development of a concept of NUTRITION is outlined on the attached chart.

Primary grades K-4	Middle grades 5-8	Upper grades 9-12
All living animals eat and drink.	Foods contain energy.	The energy of foods is available through ATP.
Animals vary in their choices of foods.	Food energy comes from the sun.	Photosynthesis captures light energy by a two-phase process yielding carbohydrates and oxygen.
Food is related to work and heat.	Food energy originates in the process of photosynthesis.	
Plants are the basic foods.	Chlorophyll, light, CO_2, and H_2O are essential to photosynthesis.	Proteins are fundamental in life processes.
Farm lands are essential in food production.	The utilization of food energy depends on digestion, circulation, respiration, excretion, and other processes.	Nutrition affects human development.
Food for man is produced by farmers, fishermen, ranchers, hunters, etc.	Food production is related to light, soil, water, climate, agricultural technology, and cultural patterns.	Food production can be improved by applied genetics.
Humans vary in their diets--some are hungry.	Food production depends on the recycling of water, CO_2, minerals.	Agricultural technology can increase food production--by use of fertilizers and pesticides.
Humans vary in their food choices and preferences.	Land areas vary in their suitability for agriculture.	Agricultural technology can damage an ecosystem.
Some humans are hungry because they are poor.	Fertile agricultural lands are often withdrawn from cultivation for other uses.	
	Undernourishment in a population may be due to low food production rate in relation to high reproduction rate.	
	Poverty is an ecological problem.	
	Malnutrition may be due to poverty, culture, or ignorance.	
	Millions of human beings suffer from protein deficiencies.	

During the school year, 1970-71, the materials prepared in the summer, 1970 will be evaluated; and in the summer 1971, the population curriculum materials will be revised and prepared for dissemination.

UNIVERSITY OF DELAWARE POPULATION PROBLEMS LECTURE SERIES 1969-70

Sept. 15 -Population Dynamics: Global Perspective
Robert C. Cook, President Emeritus, Population Reference Bureau, Wash., D.C.

Sept. 29 -Population Dynamics: Regional Perspectives
C. Harold Brown, Director, Division of Urban Affairs and Professor of Sociology, University of Delaware

Oct. 6 -Interaction between Birth Rate and Death Rate
Carl E. Taylor, Chairman, Department of International Health, School of Hygiene & Public Health, Johns Hopkins University

Oct. 20 -World Hunger
Georg Borgstrom, Professor of Food Science and Economic Geography, Michigan State University

Nov. 3 -World Food Production
Sterling B. Hendricks, Chief Scientist, Mineral Nutrition Laboratory, U. S. Department of Agriculture

Nov. 17 -Green Revolution: Agriculture for the Future
J. G. Horsfall, Director, Connecticut Agricultural Experiment Station

Nov. 24 -Water and People
Robert Varrin, Director, Water Resources Center and Assistant Professor of Civil Engineering, University of Delaware

Dec. 1 -Problems of Waste Disposal
J. Caleb Boggs, U. S. Senator from Delaware

Dec. 8 -Energy for the Future
Gerald F. Tape, President, Associated Universities, Inc., Wash., D.C.

Jan. 5 -Mineral Resources Today and Tomorrow
John C. Kraft, Chairman, Department of Geology, University of Delaware

Feb. 9 -The Marine Environment
John Bardach, Professor of Fisheries, School of Natural Resources, University of Michigan

Feb. 23 -Ecological Foundations of Human Populations
Lamont C. Cole, Professor of Biological Sciences, Cornell University

Mar. 9 -Economic Implications of Population Growth
Michael F. Brewer, Vice President Resources for the Future, Inc.

Mar. 16 -Food Versus the Population Equation
Frank R. Ellis, Deputy Coordinator, Office of Food for Peace, A.I.D.

Apr. 6 -Moral and Religious Issues of Population Control
Blake Smith, Pastor University Baptist Church, Austin, Texas

Apr. 13 -Genetic Implications of Population Control
Carl Bajema, Associate Professor of Biology and Sociology, Grand Valley State College, Michigan

Apr. 20 -Environmental Planning
Ian McHarg, Professor of Landscape Architecture and Regional Planning, University of Pennsylvania

Apr. 27 -Human Aspirations
Gerald Feinberg, Professor of Physics, Columbia University

May 4 -The Myth of the Population Explosion
Allen A. Schmieder, Deputy Director, Division of College Programs, U. S. Office of Education

May 18 -The Challenge of Man's Future
Frank Notestein, President Emeritus, The Population Council, New York City